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M E M O R A N D U M

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SUBJECT: Staff Analysis for the Garden Valley School District No. 71
Draft Wastewater Reuse Permit LA-000196-01 (Municipal Wastewater)

1. PURPOSE

The purpose of this memorandum is to satisfy the requirements of the Rules for the Reclamation and Reuse of Municipal and Industrial Wastewater (Rules), IDAPA 58.01.17.400.04, for issuing wastewater reuse permits (WRPs). This memorandum addresses draft WRP No. LA-000196-01, for the private, municipal wastewater treatment and reuse system owned and operated by Garden Valley School District No. 71 (GVSD).

2. SUMMARY OF EVENTS

Permit application materials for the wastewater treatment system were submitted by GVSD in February 2003. A revised application was submitted on April 29, 2003. Plans and specifications for the sanitary sewer system improvements and wastewater treatment facility were approved by the Idaho Department of Environmental Quality (DEQ) on July 2, 2003. This approval included an "Agreement Regarding Approval of Plans and Specifications" (2003 Agreement), which specifically identifies additional conditions of approval for this project. On July 2, 2004, DEQ extended its 2003 plan and specification approval through June of 2005. A revised sequencing batch reactor (SBR) tank system Design Report was submitted by GVSD in July 2004; DEQ provided comments on the revised Design Report on July 22, 2004. DEQ visited the GVSD site on August 13, 2004, to discuss system construction. Plans to re-install SBR tanks were approved September 27, 2004. Plans and specifications for chlorination and irrigation system revisions were approved by DEQ on April 19, 2005.

Prior to issuance of the WRP, GVSD requested a pilot testing period to evaluate the performance of the treatment system, gather data regarding the disinfection system, and examine water quality of the effluent stored in the winter storage lagoon at the application point (i.e., a football field). On June 1, 2005, DEQ approved a conceptual plan for an initial pilot test run of the wastewater reuse system during the 2006 growing season. This plan included conditions and restrictions for the 2006 test run, as well as monitoring and reporting requirements for operational parameters to be evaluated during the test period. On July 12, 2005, DEQ formally approved a written a plan of operation for the pilot test. GVSD commenced land-application of treated wastewater on the football field on May 16, 2006, and intermittently continued applications through July 10, 2006. DEQ conducted an inspection of GVSD's wastewater treatment and reuse facilities on June 7, 2006. The results of the inspection are documented in a letter dated June 8, 2006, and generally indicate that the facilities were in good condition and well-maintained. The final results of the pilot test indicate that the system is capable of achieving targeted reduction goals (i.e., design and/or performance parameters) for turbidity, nitrate, phosphorous, 5-day

biological oxygen demand (BOD_5), and total suspended solids (TSS); however, persistent fluctuations in system performance also indicate that this system requires qualified, ongoing oversight to ensure optimal long-term operation. System performance with regard to applicable disinfection requirements was also generally within expectations, and is further discussed in Section 6.3 of this document.

The 2003 WRP application and other supplemental information submitted by the permittee, the 2003 Agreement, and monitoring data collected and reported during the 2006 pilot test were used to develop the draft WRP provided for public review and comment. After the public review period is closed, DEQ will provide written responses to all relevant comments and prepare a final permit for GVSD's wastewater reuse facilities.

3. PROCESS DESCRIPTION

GVSD has constructed a new wastewater treatment system to replace a subsurface treatment system. Presently, this new treatment system serves an existing school; however, future plans include construction of a new school that would also be served by the new treatment system. The new school is expected to include classrooms, administration offices, media rooms, lunch/multipurpose rooms, and a gymnasium.

The existing school is located in Garden Valley on the north side of the Lowman-Banks Highway (i.e., Highway 17). The new wastewater treatment system and future school sites are located south of the Lowman-Banks Highway.

The daily flow design basis for the wastewater treatment system is as follows:

- Population: 310 students and 49 staff (based on 2002 – 2003 school year)
- Flow assumption: 15 gallons per day (gpd) per person (based on two recent school projects: Nampa Charter School and Middleton Elementary School)
- 1,290 gpd for future growth (a growth factor of approximately 1.24)
- Total design average flow = 1,290 gpd + (310 + 49) x 15 gpd = 6,675 gpd

The new treatment system is intended to maintain effluent quality sufficient to meet the requirements for Class B effluent (i.e., refer to IDAPA 58.01.17.600.07.b). The new treatment system includes the following major unit processes:

- Equalization tank (6,000 gallons)
- Two, dual-train SBRs that provide primary and secondary treatment (6,000 gallons each)
- Aerated sludge tank (6,000 gallons) for storage and treatment of biosolids
- Post equalization tank (3,000 gallons)
- Coagulant injection system, sand filtration, and two, parallel ultra-violet (UV) disinfection units
- In-line chlorinator and chlorine tank (3,000 gallons)

A new, gravity flow sewer main directs sewage flows from the existing school into a 6,000 gallon equalization tank, also referred to as the distribution tank, at the front end of the treatment system. Sewage is then directed into the SBR tanks for primary and secondary treatment. Waste activated sludge (i.e., biosolids) generated by the SBR system is either recycled back into the front end of the SBR system or sent to an aerated, 6,000 gallon sludge tank. Sludge in the sludge tank can be returned to the front end of the SBR system as needed or is retained in the sludge tank for eventual off-site disposal. After primary and secondary treatment in the SBR system, treated effluent undergoes coagulation and sand filtration prior to UV disinfection. Downstream of the UV units, the disinfected effluent is then pumped through an in-line chlorinator and 3,000 gallon, underground chlorine tank (also referred to as the disinfection

tank) into a 1.3 million gallon (MG) effluent storage lagoon. Effluent is chlorinated to achieve a free chlorine residual target of one milligram per liter (mg/L) prior to introduction into the storage lagoon. Accounting for two feet of freeboard, the effluent storage lagoon has a total, effective storage capacity of 876,000 gallons. The storage lagoon is intended to hold treated wastewater throughout the non-growing season. During the growing season, effluent from the storage lagoon will be land-applied to GVSD's 2.8-acre football field. Supplemental irrigation water from an existing, non-domestic well will also be required to meet the irrigation water requirements of the grass. GVSD also requested that two emergency land application sites be included in the permit: a 1.5-acre soccer field located northeast of the football field and a 2-acre site directly north of the football field.

4. SITE CHARACTERIZATION

4.1 Site History

The site on which the new treatment system and future school are to be built has been owned by GVSD since 1995. Prior to GVSD ownership, the site was used for grazing cattle. The site slopes gently downward to the south (i.e., less than 5%) towards the South Fork of the Payette River. In 1999, football and soccer fields were built on the site and a non-domestic well was drilled for irrigation purposes. The fields were hydro-seeded (i.e., a mixture of grasses) and a computerized sprinkler system was installed.

4.2 Soils Assessment

A geotechnical report was prepared by Kleinfelder, Inc. (Kleinfelder) as part of GVSD's site investigation efforts. Test Pit No. 8, approximately 40 feet northeast of the proposed land application site (i.e., football field), has the following subsurface profile:

- 0 to 3 feet: Clayey Sand (SC)
- 3 to 5.5 feet: Silty Sand (SM)
- 5.5 to 7.25 feet: Clayey Sand (SC)

GVSD's site investigation efforts also included data submitted by Millennium Science & Engineering, Inc. (MSE). Natural Resources Conservation Service soil survey data provided with the MSE report indicate that Stardust Series soils are found on the land application site. These soils are well drained with moderate permeability. MSE also collected composite soil samples from three locations in the football field and two locations in the soccer field on January 23, 2003. Soil analytical results are presented in Table 4.1.

Table 4.1: Results from Analytical Tests on Composite Soils Samples

Parameter (units are mg/kg unless noted)	0 – 12 inch Composite	12 – 24 inch Composite
NO_3-N	7	10
TKN	0.018	0.013
NH_4-N	2	4
P	7	5
K	107	41
pH, S.U.	6.7	6.4
Calcium	1,564	955
Magnesium	259	175
Sodium	75	48
Chloride	16.6	16.2
Iron	160	122
Manganese	53	32
Organic Matter, %	2.6	1.3
Soluble Salts	1.02	0.62
Texture	Loam	Loam
Cation Exchange Capacity, meq/100g	15	14
Sodium Adsorption Ratio	0.146	0.118

Nitrate-nitrogen and phosphorus levels measured for the site soils are considered low. Measured potassium levels are considered low to very low. Measured pH indicates a neutral to slightly acidic soil. Measured calcium and magnesium levels are low. Measured sodium levels are medium to low. The site soils are not deficient in iron or manganese. Measured organic content and cation exchange capacity levels fall within the "moderate" range of site limitations rating criteria. Sodium Adsorption Ratio values are low.

The GVSD site soils appear suitable for land application of wastewater. Staff recommends annual soil monitoring, at the end of each growing season, for nutrients, electrical conductivity, and pH.

4.3 Surface Water Assessment

As described in Kleinfelder's report, the nearest surface water to the land application site is a small stream located on the project site, 150 feet southwest of the football field. Construction drawing C1.2 prepared by CSHQA shows a wetlands site (i.e., no construction zone) located approximately 60 feet south of the football field. The South Fork of the Payette River is located 3,500 feet southwest of the land application treatment site.

4.4 Ground Water Assessment

Regional ground water is thought to flow in a southeast direction. As part of GVSD's geotechnical investigation, localized ground water levels were measured monthly from February 2001 through June 2001 at 11 locations onsite. The monitoring locations closest to the football field are Test Pit No. 8, approximately 40 feet northeast of the field, and Test Pit No. 6, approximately 250 feet southwest of the field. In February and March, the monitoring well at Test Pit No. 8 could not be located due to snow cover. Available measurements are shown in Table 4.2.

Table 4.2: Ground Water Elevations From Selected Site Test Pits

Date	Depth Below Ground Surface, ft	
	Test Pit No. 8	Test Pit No. 6
November 20, 2000	9.5	N/A
February 7, 2001	N/A	4.23
March 7, 2001	N/A	3.46
April 5, 2001	3.21	0.11
May 10, 2001	4.16	0.61
June 6, 2001	4.97	1.73
June 29, 2001	5.24	2.48

Based on the high ground water levels experienced at the site in the spring, staff recommends that land application of wastewater be limited to May 1 through October 31 of each year.

GVSD's WRP application also presents the results of nitrate, fluoride, and total dissolved solids (TDS) analyses for samples from the football field irrigation well. Analytical results for the sample collected on February 25, 2003, are as follows: 3.52 mg/L nitrate, 0.25 mg/L fluoride, and 114 mg/L TDS.

5. WASTEWATER CHARACTERISTICS

GVSD developed a daily water balance around the effluent storage lagoon, accounting for expected wastewater flows from the schools, precipitation, evaporation, and land application flows. With a land application season of May 1 through October 31, treated effluent will be stored from November 1 until April 31 of each year. During this 181 day storage period, GVSD's water balance estimates 324,000 gallons of precipitation and 105,000 gallons of evaporation. Thus, assuming that the lagoon is empty on November 1, wastewater flow into the storage lagoon from November 1 through April 31 will be limited to 657,000 gallons (876,000 – 324,000 +105,000) to maintain a 2 foot freeboard. This equates to an average daily flow of 3,630 gallons (657,000 gallons/181 days). During the 6-month storage period, flows to the treatment system are expected to be lowest during the months of December and March, due to scheduled school vacations.

Staff recommends that GVSD calculate and report the daily volume of wastewater to the SBR system. In addition, staff recommends that the permit include limits for a daily maximum flow to the SBR system (i.e., 6,675 gpd) and a maximum flow to the SBR system during storage months (i.e., 657,000 gallons).

GVSD plans to irrigate with 100% treated effluent from the beginning of the application season, until the lagoon is "empty". GVSD's water balance estimates that the pond will be "empty" in early July. The lagoon would again be drawn down at the end of the application season to maximize the storage volume from November 1 through April 31. A monthly water balance demonstrating this approach is presented in Table 5.1. Estimates for effluent flow into the lagoon, precipitation, and evaporation are taken from GVSD's water balance. This balance estimates that 1.13 MG of treated effluent will be land applied during the application season.

Table 5.1: Projected Monthly Water Balance for the Storage Lagoon

Month	Beginning Volume (Gallons)	Effluent Flow In (Gallons)	Precipitation (Gallons)	Evaporation (Gallons)	Land-Applied Effluent (Gallons)	Ending Volume (Gallons)
May	876,000	133,350	29,970	66,967	394,316	578,037
June	578,037	5,190	26,815	71,748	508,421	29,873
July	29,873	5,220	9,048	81,313	0	0
August	0	49,350	9,613	76,531	0	0
September	0	133,200	18,059	47,831	59,452	43,976
October	43,976	127,500	27,708	28,700	170,484	0
Total					1,132,673	

Anticipated concentrations of total nitrogen and total phosphorus in the wastewater effluent are presented in Table 5.2. The nitrogen and phosphorus concentrations are maximum final effluent quality levels designated by Quality Water Systems, Inc. The COD concentration is a typical value for this type of treatment system.

Table 5.2: Projected Wastewater Constituent Concentrations

Constituent	Effluent (mg/L)
Total Nitrogen	10
Total Phosphorus	4
Chemical Oxygen Demand (COD)	20

6. REGULATORY DISCUSSION

This section of the staff analysis discusses permit conditions that were specifically developed for WRP No. LA-000196-01. Standard permit conditions and non-technical aspects of the draft permit (e.g., Sections A-D, I, and J of the permit) are not specifically discussed within this document. Refer to DEQ's *Guidance for Reclamation and Reuse of Municipal and Industrial Wastewater* for information related to standard permit conditions and other boilerplate language contained in the WRP.

6.1 Hydraulic Loading Rate Limit

Current WRP guidance (i.e., *Guidance for Reclamation and Reuse of Municipal and Industrial Wastewater*) specifies that the growing season hydraulic loading rate should substantially approximate the irrigation water requirement (IWR) for the specific crop grown on each HMU. The land application season for this project will be from May 1 to October 31 (i.e., 184 days). For permitting purposes, the application season equates to the growing season. Land application during the non-growing season was not proposed by GVSD and will not be allowed in the permit.

The following equation is used to determine the hydraulic loading rate for the growing season:

$$IWR = [CU - (PPT_e + \text{carry over soil moisture}) + LR]/E_i$$

Where: IWR is the irrigation water requirement or the hydraulic loading rate for the growing season
CU is the crop consumptive use
PPT_e is the effective precipitation
LR is the leaching rate

E_i is the irrigation efficiency

For permitting purposes, the soil carry over moisture and leaching rate are assumed to be zero in calculating the IWR. The IWR for grass (i.e., pasture) grown in this area is summarized in Table 6.1.

Table 6.1: Irrigation Water Requirement and Supporting Variables

Crop	CU (inches)	PPT_e (inches)	E_i (%)	IWR (inches)	IWR (MG)
Pasture	32.7	4.7	80%	35.0	2.66

The annual hydraulic loading requirement for the application season will be approximately 35.0 inches (i.e., 2.66 MG over 2.8 acres). GVSD's projected, annual volume of land applied wastewater is 1.13 MG. An on-site irrigation well is available as supplemental irrigation water to meet the IWR for the proposed crop.

6.2 Nitrogen Loading Rate and Effluent Constituent Requirements

Based on the wastewater characteristics presented in Section 5 of this document (i.e., 1.13 MG of wastewater applied over 2.8 acres, with total nitrogen and total phosphorus concentrations of 10 mg/L and 4 mg/L, respectively), the projected (i.e., design) nutrient loading rates will be approximately 33.7 pounds of nitrogen per acre per day (lbs/acre-year) and 13.5 lbs phosphorus/acre-year. Approximate nitrogen and phosphorus requirements for established lawn and turf grass areas where clippings are removed are 132 lbs nitrogen/acre-year and 19 lbs phosphorus/acre-year.

Although the projected nitrogen loading rate presented in the preceding paragraph is very low with respect to estimated agronomic uptake rates, GVSD has specifically requested that any nitrogen concentration limit imposed on effluent from the wastewater treatment system be relaxed to 30 mg/L, with a monthly averaging period. The facility requested this allowance in an effort to reduce additional sampling requirements, and the costs associated with such additional analyses, that may be triggered in the event that any dedicated monthly sample is reported to be greater than 10 mg/L (i.e., if the first sample is greater than 10 mg/L, additional samples with analytical results lower than 10 mg/L would be required to bring the monthly average value below 10 mg/L). Land application of wastewater with a nitrogen concentration of 30 mg/L could potentially increase the projected, annual nitrogen loading rate to 101.4 lbs/acre. This annual loading rate is approaching the estimated annual agronomic uptake rate of 132 lb/acre; however, DEQ's current guidance specifies that an annual nitrogen loading rate limit equal to 150% of typical crop uptake is appropriate for most land application sites in Idaho. Since the projected nitrogen loading rate at a concentration of 30 mg/L is well below the recommended loading rate established in DEQ's guidance document, DEQ staff recommends that the WRP limit for nitrogen concentration in the wastewater treatment system effluent be set at 30 mg/L, with monthly wastewater sampling and monitoring provisions. Staff also recommends that the WRP contain an annual nitrogen loading rate limit of 150% of typical crop uptake, to protect ground water and ensure consistency with other WRPs issued by the State of Idaho. Finally, the WRP requires that grass clipping from each mowing event must be removed from each HMU in order to ensure that nitrogen utilized by the turf grass does not leach back into the subsurface (i.e., refer to "Crop Management and Grazing Requirements" in Section F of the WRP).

The estimated phosphorus uptake rate of turf grass exceeds the projected phosphorus loading rate,

and is expected to reasonably prevent any phosphorous issues from occurring onsite. Staff does not recommend that a phosphorus loading rate limit be included in the permit at the present time; however, to ensure that the projected phosphorous loading rates are not exceeded, staff does recommend that the permit limit the monthly average concentration of total phosphorus in effluent from the wastewater treatment system to 4 mg/L or less, with monthly sampling/monitoring provisions.

The typical COD loading rate limit applied in WRPs issued by the State of Idaho is 50 lbs/acre-day. The projected COD loading rate for this site is 0.37 lb/acre-day during the application season. Based on the low projected COD loading rate, staff does not recommend COD loading rates limits or monitoring at this time.

Turbidity requirements for Class B effluent are contained in IDAPA 58.01.17.600.07, and stipulate that turbidity of the effluent must be monitored continuously, with no 24-hour average measurements exceeding 2 Nephelometric Turbidity Units (NTU) and with no instantaneous maximum measurement exceeding 5 NTU. Staff recommends that these turbidity requirements be included in the permit along with continuous monitoring to assess compliance with the limits.

The 2003 Agreement establishes limits for monthly- and weekly-average BOD_5 and TSS concentrations in effluent discharged from the treatment system. The agreement also contains a 90-percent removal specification for each of these parameters. These limits and specifications reflect underlying design parameters for GVSD's treatment system, as approved for construction/operation by DEQ, and are used as system performance indicators to assess and/or demonstrate that the system is operating as designed. These parameters are critical in assessing the long-term performance of the treatment system; consequently, staff recommends that the permit contain the limits specified in the 2003 Agreement for BOD_5 and TSS concentrations in wastewater treatment system effluent, along with weekly sampling/monitoring to demonstrate compliance.

6.3 Disinfection/Chlorine Residual Requirements

Disinfection requirements for Class B effluent are contained in IDAPA 58.01.17.600.07, and stipulate that at the point of compliance, the median number of coliform organisms cannot exceed 2.2 total coliform units per 100 milliliters of effluent (TCU/100 mL) as determined from the bacteriological results of the last seven days for which analyses have been completed, and also cannot exceed 23 TCU/100 mL in any confirmed sample. Additionally, the Rules specify a residual chlorine concentration at the point of compliance equal or comparable to the disinfection achieved by chlorination with 1 mg/L after 30 minutes of contact time. Although the 2003 Agreement stipulates a slightly different set of disinfection criteria, the specifications contained in the agreement were drafted prior to the current Rules, and are considered superseded by the current Rules for purposes of determining the applicable requirement for inclusion in the WRP.

The Rules allow the point of compliance for total coliform to be "…any point in the system following final treatment and disinfection contact time." For GVSD's wastewater treatment system, final treatment and the required disinfection contact time occur in the 3,000 gallon, underground chlorine tank, prior to discharge to the 1.3 MG effluent storage lagoon. Although DEQ recommends disinfection following storage (e.g., to minimize any potential risks associated with the exposed lagoon and/or bacterial re-growth, maintenance of distribution pipeline, etc.), IDAPA 58.01.17.600.07.b does allow the GVSD wastewater treatment/reuse system to establish the point of compliance prior to storage. During the 2006 pilot test, wastewater samples for

coliform and free chlorine residue analyses were collected directly from the sprinkler heads on the HMU while the system was in operation (i.e., during land application of treated wastewater *after* extended storage in the effluent lagoon). This particular sampling requirement was intentionally utilized during the pilot test to assess the potential for any adverse impact(s) associated with establishing the point of compliance at the discharge pipe into the effluent lagoon (i.e., as opposed to using the land application site as the point of compliance).

Pilot test data reported by GVSD indicated a total coliform presence of 2 or less MPN/100mL (i.e., "most probable number", equivalent to TCU) in every wastewater sample collected from the sprinkler heads. Free chlorine residue was consistently reported beneath the minimum detection level of the analytical method in wastewater samples collected from the sprinkler heads. This data appears to indicate that extended storage of treated wastewater, and the use of the storage lagoon influent as the point of compliance, may not constitute any issue of concern, although DEQ notes that the quality of the treated wastewater retained in the storage pond will be greatly affected by any operational fluctuations at the treatment plant and exposure during the non-growing season (i.e., these pilot test results do not preclude any future operational uncertainties). Additionally, DEQ notes that there was a degree of operational fluctuation associated with the 2006 pilot test, as the chlorination rates fluctuated radically throughout the testing period and generally appear to have exceeded design chlorination rates. This may have impacted or biased the results of the coliform analyses (i.e., the higher chlorination rates may have artificially influenced coliform populations). However, even with this operational uncertainty, the pilot test data does indicate that the wastewater reuse system can be operated with minimal risk to public health. Consequently, based on the results of the pilot test, staff recommends that the WRP utilize effluent discharged to the storage lagoon as the point of compliance for purposes of assessing total coliform and disinfection criteria against the Class B requirements.

Compliance with the Class B requirements is typically demonstrated by use of a continuous chlorine analyzer, to assess the free chlorine residual, coupled with periodic wastewater sampling and analysis for total coliform to ensure that adequate disinfection is occurring (i.e., chlorine residual serves as an informal surrogate parameter to continually ensure compliance with coliform requirements). Although the plans and specifications approved by DEQ did specify a continuous chlorine analyzer for the GVSD system, budget constraints for the project appear to have precluded installation of this unit. In the absence of a continual demonstration that effluent at the point of compliance has been properly chlorinated, there is less assurance that disinfection requirements will be satisfied on a continual basis. Consequently, to limit any adverse impact that could results from land application of effluent that has not been properly disinfected, staff recommends that wastewater in the effluent storage lagoon be analyzed for total and fecal coliform, prior to land application of wastewater each year. In the event that the analysis indicates the presence of coliform in excess of 23 TCU/100 mL, additional chlorine must be added directly to the lagoon, followed by adequate mixing, until analytical results indicate that the wastewater meets the instantaneous coliform standard. Until it has been demonstrated that the lagoon effluent can meet the instantaneous coliform standard each season, land application of the effluent shall not be allowed.

Additionally, free chlorine residual and total coliform measurements will be manually taken on a weekly basis, prior to discharge into the effluent storage lagoon. This monitoring will be used to assess proper day-to-day operation of the treatment system.

6.4 Buffer Zone Requirements

Given the disinfection and residual chlorination requirements at the point of compliance for this system, staff recommends that the following HMU buffer zone distances be specified in the permit:

- Areas of Public Access: 0 feet
- Inhabited Dwellings: 100 feet
- Surface Waters: 10 feet (mitigation measures to prevent runoff into surface waters shall be employed)
- Private Water Sources: 100 feet
- Public Water Sources: site specific (required DEQ plan and specifications review prior to well construction)

In addition, reclaimed water shall not be sprayed within 100 feet of areas where food is prepared or served or where drinking water fountains are located.

In accordance with IDAPA 58.01.17.600.07, Class B effluent can only be applied during periods of non-use by the public. Consequently, staff recommends that irrigation only be allowed during periods of non-use (i.e., times when the football field will not accessed), including an allowance of time for the field to sufficiently dry before use.

Staff recommends the posting of reclaimed water signs around the perimeter of the land application sites, at the wastewater treatment facility and effluent storage lagoon, and at access points to the effluent distribution system. In addition, staff recommends that the access points be lockable or have restricted access to prevent unauthorized use.

6.5 Monitoring Requirements

Section G of the permit contains monitoring requirements necessary to ensure proper operation of the wastewater treatment plant and land application facilities, and to demonstrate compliance with permit conditions and limits contained in Section F of the permit. Significant monitoring requirements were discussed/identified in the preceding sections of this document.

It should be noted that the permit contains no monitoring requirements related to crop tissue analyses or crop uptake estimates at this time. Given the nature of the application sites and the relatively low loading rates discussed in Section 6.2 of this document (i.e., less than typical agronomic requirements for turf grass), staff recommends that annual hydraulic, nitrogen, and phosphorous loading rates be used in conjunction with annual soil analyses to monitor and assess the ongoing impacts of GVSD's land application operations over time. Additional monitoring requirements may need to be imposed at a later time if these parameters indicate that any substantive issues may be occurring onsite.

6.6 Reporting Requirements

Section H of the permit contains the Annual Report requirements for the land application sites. The Annual Report should be submitted no later than January 31 of each year, and should essentially contain results from all work conducted during the previous annual period for each monitoring requirement listed in Section G of the permit. This section also requires reporting related to the status of compliance activities contained in the permit.

6.7 Compliance Activities/Ongoing Site Management

Staff recommends the following items be included in the permit as compliance activities, to ensure proper site management:

1. Have GVSD prepare a plan of operations for the reuse system. It should be noted that GVSD submitted an initial Operations and Maintenance Manual (O&M Manual), dated March 30, 2006, for the wastewater reuse system; however, DEQ has delayed formal review and comment on this document until issuance of the WRP, as the terms and conditions in the final permit are likely to affect the content needed within the manual.
2. Require GVSD to conduct seepage rate testing of the effluent storage lagoon within the first year of the permit. DEQ notes that the lagoon has not been evaluated for seepage at the present time.
3. Submit a permit renewal application package at least 6 months prior to permit expiration date.

As indicated throughout this document, the GVSD wastewater treatment system and reuse facilities constitute rather complex systems and require qualified management and oversight to ensure proper operation. Consequently, Section F of the WRP includes a requirement that the system must be operated by personnel certified and licensed in the State of Idaho wastewater operator training program at the operator class level specified in IDAPA 58.01.16.203 of the Wastewater Rules, and properly trained to operate and maintain the system.

Excess sludge will accumulate in the sludge tank as the wastewater treatment system is operated over time. It is currently anticipated that this sludge will occasionally be pumped out and hauled offsite for disposal; however, it should be noted that Condition No. 5 in Section I of the WRP contains specific requirements for management and disposal of waste solids generated by the treatment system. Staff believe that this permit condition to be sufficient to establish regulatory oversight at the present time, and have not included any additional provisions related to waste solids management in the WRP.

Finally, it should be noted that the WRP has been drafted as to include and/or address all substantive requirements of the 2003 Agreement between GVSD and DEQ. Encapsulation of on-going, relevant terms and conditions of the 2003 Agreement within the framework of the WRP establishes a pathway for eventual dissolution of the 2003 Agreement. This was done in an effort to reduce/consolidate the number of applicable requirements and regulatory documents that apply to the facility. It should be noted that formal allowances for dissolving the agreement are established under Item No. 9 of the 2003 Agreement, and require a formal, written agreement between GVSD and DEQ.

7. RECOMMENDATION

DEQ staff recommends issuance of the attached draft permit for a public review and comment period. The draft permit contains effluent quality requirements for the wastewater treatment system, as well as terms and conditions required for operation of the land application system. Monitoring and reporting requirements to evaluate system performance and to determine permit compliance have been specified. Finally, compliance activities recommended in the staff analysis have been incorporated into Section E of the permit.